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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/913,860	09/27/2001	Masataka Masuda	P07340US00/	5469

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EXAMINER

NGUYEN, TAM M

ART UNIT

PAPER NUMBER

1764

DATE MAILED: 04/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/913,860

Applicant(s)

MASUDA ET AL.

Examiner

Tam M. Nguyen

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 September 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

Art Unit: 1764

## DETAILED ACTION

### *Claim Objections*

Claim 7 is objected to because of the following informalities: the expression "inclaim 1" in the last line of the claim is incorrect. The expression should be recited as --in claim 1--. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Logsdon et al.

(4,876,402).

Logsdon discloses a method for making a composition by mixing a mixture containing

- a copper compound and a zinc compound with an aqueous solution of an alkali substance to prepare a precipitate which is then calcined and formed the calcined precipitated into a shaped form (e.g., table molding) of copper oxide-zinc oxide mixture. Nickel is then impregnated into the shaped form. The nickel impregnated mixture is then calcined to produce calcinated oxide and the calcined oxide is reduced with hydrogen. (See col. 3, lines 6 through col. 4, lines 58; col. 5, line 7 through col. 7, line 14)

Art Unit: 1764

Claim 1 is directed to a "manufacturing method" and the preamble phrase "a desulfurizing agent" is only a statement of ultimate intended utility. Therefore, the teaching of Logsdon is deemed to anticipate the limitation of claim 1.

Claim 2:

The calcined oxide contains about 1-4 wt. % of nickel. This is deemed to anticipate the limitation of claim 2. (See col. 7, lines 9-51)

Claim 3:

The calcined oxide is reduced at a temperature of from 150 to 300° C by utilizing a dilute hydrogen stream containing 1 to 5 percent hydrogen in a gas. It is noted that Logsdon does not specifically disclose that the dilute hydrogen gas has a hydrogen concentration of 6 vol. % or less. However, at STP conditions or room temperature conditions, the weight percentage of the hydrogen is similar to its volume percentage. Therefore, it would be expected that the dilute hydrogen stream would contain hydrogen of less than 6 vol. % as claimed. This is deemed to anticipate the limitation of claim 3. (See col. 4, lines 3-14)

Claim 4:

Logsdon also discloses that the mixture of copper and zinc compounds can be prepared in the presence of aluminum compound (e.g., alumina). See col. 3, lines 49-56; col. 4, lines 59-68

Claim 4 is directed to a "manufacturing method" and the preamble phrase "a desulfurizing agent" is only a statement of ultimate intended utility. Therefore, the teaching of Logsdon is deemed to anticipate the limitation of claim 4.

Art Unit: 1764

Claim 5:

The calcined oxide contains about 1-4 wt. % of nickel. This is deemed to anticipate the limitation of claim 5. (See col. 7, lines 9-51)

Claim 6:

The calcined oxide is reduced at a temperature of from 150 to 300° C by utilizing a dilute hydrogen stream containing 1 to 5 percent hydrogen in a gas. It is noted that Logsdon does not specifically disclose that the dilute hydrogen gas has a hydrogen concentration of 6 vol. % or less. However, at STP conditions or room temperature conditions, the weight percentage of the hydrogen is similar to its volume percentage. Therefore, it would be expected that the dilute hydrogen stream would contain hydrogen of less than 6 vol. % as claimed. This is deemed to anticipate the limitation of claim 6. (See col. 4, lines 3-14)

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 7, 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-06-22870 in view of Logsdon et al. (4,876,402).

The JP patent discloses a desulfurization process by contacting a raw hydrocarbon feed with a catalyst comprising Cu, Zn, and Ni, in the presence of hydrogen. (See paragraphs 0016-0029)

Claim 7:

The JP patent does not specifically disclose that nickel is impregnated into the calcined copper oxide-zinc oxide mixture. However, Logsdon discloses a method of making a catalyst comprising Cu, Zn, and Ni as claimed (see col. 3, lines 6 through col. 4, lines 58; col. 5, line 7 through col. 7, line 14). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of the JP Patent by utilizing the method of impregnation of nickel into the calcined copper oxide-zinc oxide mixture as taught by Logsdon because it would be expected that results would be the same or similar

Art Unit: 1764

when making the catalyst as taught by Logsdon because the composition of the catalyst of the JP patent is the same as the claimed composition.

Claims 8 and 10:

The raw hydrocarbon is town gas and the molar ratio of hydrogen to town gas is 0.36.

(See paragraphs 25 and 41)

Claims 9, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over references as applied to claims 7 and 10 above, and further in view of EP-1192981.

The JP patent discloses that the desulfurization step is operated at a pressure of from 1 - 10 kg/cm<sup>2</sup> (1 - 10 atm) and at a temperature of from 280-380° C and wherein the raw hydrocarbon is town gas. (See paragraphs 0025, 0029, and 0030)

Claims 9 and 11:

The JP patent does not disclose that the desulfurization step is operated at a space velocity (GHSV) of 200 to 10,000 h<sup>-1</sup>. However, the EP patent discloses a hydrodesulfurization process wherein the process is operated at a space velocity (GHSV) of 200 - 4,000. (See page 4; lines 16-25). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of the JP patent by operating the desulfurization step at a space velocity as taught by the EP patent because such space velocity is effective in a desulfurization process.

Claim 12:

The JP patent does not disclose that the desulfurization is formed so that the sulfur content in the town gas is not more than 6 ppb. However, the modified process of the JP patent is similar to the claimed process in terms of feedstock, operating conditions, and catalyst.

Art Unit: 1764

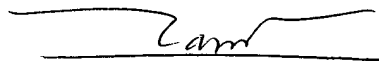
Therefore, it would be expected that the modified desulfurization process of the JP patent would have the sulfur content in the town gas as claimed.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tam M. Nguyen whose telephone number is (703) 305-7715. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 703-308-6824. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-5408 for regular communications and (703) 305-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Tam M. Nguyen  
Examiner  
Art Unit 1764

TN  
April 1, 2003